

## A NEW SPECIES OF TREE FROG (*HYLA*) FROM PAPUA

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(Communicated by M. J. Tyler)

[Read 10 July 1969]

A collection of frogs from Efogi in the Owen Stanley Mountains includes a tree frog (*Hyla*) with a combination of characters unlike that of any other Papuan species described in the recent monograph by Tyler (1968).

With reference to the pronounced dermal spike on the snout, the new species is named

*Hyla prora*† new species.

**Holotype.** University of Papua and New Guinea No. 1015, an adult male collected near Efogi by the writer on December 12, 1968. Altitude 3,800'; location 147° 38' E.; 9° 9' S. and approximately 37 miles north-east of Port Moresby.

**Paratypes.** There are four paratypes, all adult males, collected at the type locality with the holotype: University of Papua and New Guinea Nos. 1018 and 1019; South Australian Museum Nos. R. 10410, 10411.

**Diagnosis.** A medium-sized arboreal *Hyla* with fully webbed fingers, a pronounced fleshy spike on the end of the snout and cryptic, lichen-like dorsal markings.

### *Description of the holotype*

Habitus slender, and flattened, the outline at rest irregular and extremely cryptic (Fig. 1A and 1B).

**Dimensions:** body length (S-V), from apex of rostral spine to cloaca 39.3 mm.; tibial length (TL) 19.0 mm.; head length (HL), including spine 13.5 mm.; head width (HW) 11.4 mm.; eye to nostril distance (E-N) 2.9 mm.; internarial distance (IN) 4.5 mm.; eye diameter 3.7 mm.; tympanic diameter 1.9 mm.

The head is flattened and longer than broad (HL/HW 1.19) and slightly more than one-third of the body length (HL/S-V 0.34). The snout bears an acutely tapering fleshy spine, forwardly directed and sharply demarcated from the head. The spine is 2.3 mm. long and 1.4 mm. wide at the base. The nostrils are completely lateral and set in depressions on raised tubercles. The eye to nostril distance is greater than that between the nostril and the apex of the rostral spine but less than the internarial distance (E-N/IN 0.644). The canthus rostralis is strongly curved but not well defined due to the warty nature of the skin. The loreal region is oblique and slightly concave. The eye is small, approximately one and three quarters times its distance from the nostril. The tympanum is small and ill-defined being completely covered with skin. Its upper one-third is concealed by the supratympanic fold of skin but the lower rim is prominent. The tympanic diameter is approximately one-half that of the eye. The vomerine teeth are in two very small groups level with the mid-line of the choanae. Their

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† From the Greek *prora*, the prow of a ship.

distance from the choanac is about twice their own width. The inferior margin of the lower jaw bears a row of prominent irregular dermal flaps and tubercles.

The fingers are fairly long and extensively webbed and have large terminal discs. The web extends to the base of the discs on digits 2 and 4 and to the penultimate articulation on digit 3. Fingers in decreasing order of length are  $3 > 4 > 2 > 1$ . There is an elongate moderately pigmented nuptial pad (Fig. 1C).

The hind limbs are fairly short (TL/S-V 0.483), toes in decreasing order of length are  $4 > 5 \approx 3 > 2 > 1$ . The web extends to the base of the disc on the 5th digit, to the penultimate articulation on digits 2 and 4 and to the pre-penultimate articulation on digit 3, continuing as a narrow fringe to the base of the disc. There is a moderate inner metatarsal tubercle but no outer one. The sub-articular tubercles are poorly developed.

The skin on the dorsal surface is entirely and irregularly covered with low, rounded tubercles. A fold of skin commences at the posterior corner of the eye, passes across the tympanum, over the insertion of the fore-limb and continues to the groin. The dorsal skin of the fore-limbs is similar to that of the body. There is a pronounced, irregularly crenulated fringe from the posterior side of the elbow to the disc of the 4th digit. A similarly crenulated fringe runs down the posterior side of the hind-limb, from the middle of the tibial section to the disc of the 5th digit. A large triangular dermal flap at the heel forms part of this fringe. Two large, semi-circular, warty flaps are situated ventro-lateral to the cloaca.

The ventral surface is entirely and irregularly tubercular with the exception of the fore-limbs and the hind-limbs, distal to the knees, which are smooth. There is a gular vocal sac opening from the buccal cavity on each side of the tongue but the skin of the gular region is not markedly different from elsewhere.

#### *Colour in life*

The dorsal coloration was variable and extremely cryptic, consisting of a mixture of greys, greenish-greys and ochres forming the ground colour with smaller, scattered blotches of darker browns and blacks, the whole giving an impression of lichens on dead wood. Sometimes a faint hour-glass mark appeared, commencing between the eyes and fading out before the cloaca. The visible surfaces of the fore- and hind-limbs had darker and lighter cross bands.

The colour of the margin of the lower jaw was the same as the dorsal surface with a few black spots extending on to the gular region. The rest of the ventral surface was an immaculate white, except in the region of the groins.

The concealed surfaces of the hind limbs and the sides of the body from groin to axilla were brownish-purple with scattered white spots. This colour extended ventrally from the groins to meet in the mid-line.

The iris was gold with two lateral dark blotches extending the line of the horizontal pupil.

#### *Colour in alcohol*

The dorsal colour is basically grey with a slight bluish tinge. The hour-glass mark is discernible and brownish in the centre. There are scattered, irregular darker blotches and faint transverse bars on the limbs. The coloration of the concealed portions of limbs and body is little different from that in life.

#### *Variation*

The five type specimens form a uniform group. The head is consistently longer than broad (HL/HW 1.060 to 1.195) and may be slightly more, or slightly less, than one-third of the body length (HL/S-V 0.318 to 0.357). The

E-N/IN ratio varies from 0.511 to 0.708 and the eye diameter is always less than the internarial distance. The body length varies from 38.1 mm. to 41.2 mm.

The basic coloration is the same in all specimens but the irregularity of the pattern makes no two exactly alike. The hour-glass mark varies in intensity and the dark colour of the groins varies in extent. In the holotype the groin patches meet broadly in the mid-ventral line, in one paratype they meet narrowly, in another they fail to meet at all.

The crenulated fringes on the limbs and the dermal lappets on the margin of the lower jaw vary in size and distribution.

The nuptial pads vary slightly in shape but all consist of a long, narrow, proximal portion and a shorter, wider, distal part.

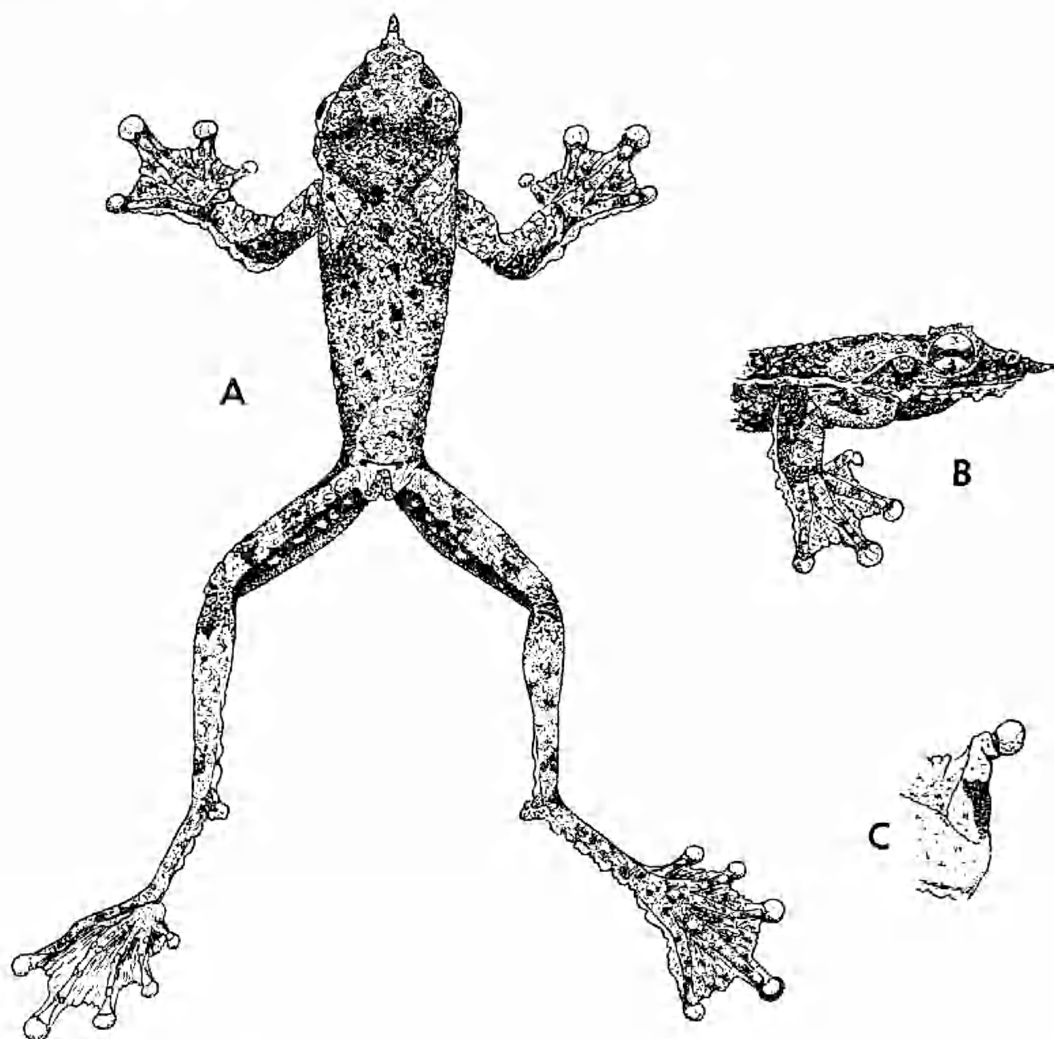


Fig. 1 *Hyla prora*, new species, holotype.  
A. dorsal view with left hind foot turned to show ventral surface.  
B. lateral view, head and fore limb.  
C. left thumb and nuptial pad.

### Voice

The call consists of 3 to 10 figures at approximately one-third of a second intervals, the figures not sharply cut off but fading into the succeeding ones. The frequency intensity maximum is 2.2 Kcs. and the acoustic impression is a faint, wavering bleat. A more detailed analysis of the call, together with that of other Papuan frogs, will be published in due course.

### Habitat

The holotype and the four paratypes were collected at night as they called from low bushes overhanging a small pond, about half a mile from Efogi village. The natural vegetation of the region is dense rain forest on steep-sided valleys but there are considerable areas under cultivation and patches of coarse grass (kunai) where the forest has failed to regenerate after clearing. The pond was on the boundary between such a kunai patch and the forest, a few yards from a running stream.

The Owen Stanley Mountains are the most easterly of the central ranges of the New Guinea mainland. They rise to over 12,000'.

### Comparison with other species

The presence of a distinct rostral spine sets the new species apart from all other Papuan *Hyla*, the nearest approach to this condition being seen in *H. spinifera* which has an extremely prominent snout and is also a tubercular montane species. However, the hands of *spinifera* are unwebbed so that further comparison is unnecessary.

The only other Papuan *Hyla* with fully webbed hands are *amboinensis*, *aruensis*, *darlingtoni* (some individuals), *eucnemis*, *graminea* and *multiplica* but these species all have rounded snouts. Additional points of comparison are as follows. *Hyla amboinensis* is a lowland species, generally larger; it has a loud giggling call that can be heard one hundred yards distant. *Hyla aruensis* has a smooth dorsal skin and a uniform green colour; *H. darlingtoni* is a montane species but the backs of its thighs are vividly marked black and yellow; *H. eucnemis* is a submontane species but its nostrils are closer together (E-N/IN 1.0 to 1.5 compared to 0.5 to 0.7) and its nuptial pad is a different shape; *H. graminea* is a much larger plain green species; *H. multiplica* is another montane species but the colour is different (green in life) and the dermal folds on the limbs are not nearly so prominent.

### ACKNOWLEDGEMENT

I wish to thank Mr. M. J. Tyler of the South Australian Museum for his critical reading of the manuscript and for examining two of the paratypes.

### REFERENCE

TYLER, M. J. (1968). Papuan hylid frogs of the genus *Hyla*. Zool. Verh., Leiden. (96): 1-203.